

U N E S C O



SOURCES

JUST AS IN LIFE

Joselias Sanchez Ramos
Writer
Manta, Manabí
Ecuador

 In reading your article entitled "Where Do We Go From Here" in *Sources* No. 60, I was struck by the phrase "today capitalism has spent its historic effect." I am in complete agreement with this statement. With globalization, marxism and capitalism are running dry. We are in the process of creating a new paradigm, a new justification for existence.

The word *development* first appeared after World War II. Our countries (in Latin America) are considered under-developed because they have not attained the same level as the countries which coined the word and its paradigm. Since then, other terms, like *modernization*, *socio-economic development*, and most recently, *sustainable development*, have been added. And yet, the word *development* is itself worn out since it means nothing. We must go farther: to live is also to breath, eat, work, learn, communicate, find satisfaction.

In Latin America, we have our own level of satisfaction. We don't need that of developed countries. To satisfy a human need there is no rule, nor can there be a model proposed by the North. As a popular saying in my region puts it: "You don't eat chicken with somebody else's fingers."

The problem is that we are influenced by international politics, the media and their messages, international investment and its products. Today, we are encouraged to think in terms of neo-liberalism, to assume the guardianship of that environment in the Americas which we have not already destroyed. We are treated like drug traffickers whereas we are the consequence of international trade.

Our people are expected to adapt to modernization, privatization and competition, and, at the same time, called upon to tighten their belts and limit consumption of electricity, gas, education... And even when *globalization* has gone out of fashion, something else will be invented to occupy us and prevent us from thinking about our own, specific level of satisfaction.

Yes, the word *development* is old and tired. As another saying in my village goes: "It's during the voyage that the pack load should be adjusted". Just as in life!

TO FIND OUT MORE?

Jean Marie Regnaud
Laroque des Albères
Pyrénées Orientales
France

 I would like to congratulate you on the quality of the dossiers presented in *Sources* and for all of the other informative material - including news items - throughout your pages.

I especially appreciated the clarity of your issue No. 58 (Culture and Development) and the very rich dossier in No. 60 (Biodiversity) which makes readers want to find out more in order to contribute, at various levels, to the promotion of biodiversity.

More particularly, in your "To Find out More" section, you make a number of suggestions for further reading. Would it be possible, in future dossiers which I hope will be numerous and just as rich, for you to indicate the price of these documents and how they can be obtained.



The documents mentioned at the end of each dossier are all published by UNESCO, but since many of them are produced by different sectors of the Organization, we are unable, due to space limitations, to provide details. If you are interested in a particular document or documents, please write to us and we will forward your letter to the appropriate sector - ED.

AND CUBA?

David G. Gross
Historian
Palma Seriano
Cuba

 A faithful reader of your publication for many years, I constantly draw inspiration from your articles which I see as windows onto the world in which we live.

Nonetheless, in reading your dossier No. 59 on "Special Needs in the Classroom," I cannot help asking myself why *Sources* does not report on the work carried out in my country, Cuba, and through our revolution for the benefit of our citizens and the other inhabitants of the planet? Our Ministry of Education has created special schools not only for the handicapped, but also for the blind, the deaf, the mentally ill and others with behavioural problems - or for those children considered in other countries to be anti-social.

With what original sin are we afflicted to merit exclusion from the pages of *UNESCO Sources*? I deeply regret that what we have accomplished in the fields of education, science and culture is not better known in other countries.



UNESCO Sources does not report on education, science and culture in Member States as such, only on activities directly linked with UNESCO. Accordingly, the magazine has frequently devoted "news items" to Cuba, as for instance, on a UNESCO seminar for women and the media in Santiago de Cuba (No. 62), Fotocaza '90, organized by the Cuban National Information Agency, the IPDC Prize for Rural Communication awarded to the Cuban Association ANAP (1989) and many references to UNESCO's Safeguard Campaign for the Plaza Vieja in Havana and other cultural projects emanating from UNESCO's Regional Office there. - ED.

GOING WHERE?

Construction of the "information superhighway" has begun. In the most developed countries, companies involved with telecommunications, computers as well as written and audio-visual data have put up billions of dollars to secure the best place on the 21st century's most promising market. The "information revolution" is taking form. Its capacity to produce, process, stock and rationally use information will make all the difference in the world.

An organization whose first purpose is to encourage the "free exchange of ideas and knowledge," especially in promoting "the free flow of ideas by word and image" must include this revolution in its programme. This was the recommendation put forth by the Executive Board at its last session, largely dedicated to UNESCO's work in the medium term (1996-2001).

A century and a half ago, the industrial revolution did not give everyone cause to celebrate. To prevent an upheaval of the same magnitude from engendering the same sort of effects, humanity must control the transition to an information society. Firstly, we must consider the impact of the revolution beyond the limited views of a select circle of entrepreneurs and experts. When our future is at stake, everyone must have access to the debate.

This revolution contains not only immense potential but a substantial danger: intensified exclusion. Today, where are the staggering amounts of capital needed for building this superhighway? Who possesses the means to take this route: the electricity, a computer, the tokens for the tolls? The final and perhaps main question asks who is capable of not just receiving information but actually emitting it on this superhighway.

The global village cannot be built on the same blue-print used to construct so many of today's megapoles, divided between residential neighborhoods and poor housing districts which even hope has abandoned.

René LEFORT

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Teacher's
Emergency Package.



How can religious
instruction
teach tolerance?

Cover photo:
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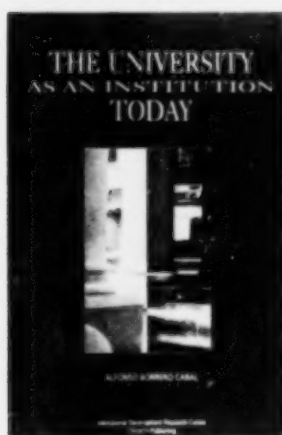
UNESCO SOURCES

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BOOKS

THE UNIVERSITY AS AN INSTITUTION TODAY

The second half of this century has witnessed a global boom in higher education accompanied by a growing awareness in both the developing and industrialized worlds, of its vital role. Yet this awareness comes at a time of serious global crisis. Several Eastern European countries, for instance, after changing their economic and political systems, are adapting higher education to new needs. Some universities in industrialized countries face declining student populations, while in many developing countries, post-secondary education has grown enormously. Written by Colombian philosopher, theologian, architectural historian and educator, Father Alfonso Borrero Cabal, and published by the International Development Research Centre (IDRC) in Ottawa (Canada), this book weaves together the themes of history, theory, and administration to probe the



fundamentals of the university ideal. It also examines its philosophy, missions, functions, objectives, structures and service to culture and the professions. The result is a unique reference book and guide to the university and the world of higher education today.

● *The University as an Institution Today*, by Alfonso Borrero Cabal, UNESCO/IDRC 1993, 238 pp., 100 FF.

TV TRANSNATIONALIZATION: EUROPE AND ASIA

The growth of television distribution has led, in both the industrialized and developing world, to easy access to news, information and entertainment originating in foreign countries. Yet, at the same time, these events have been causing concern to some governments wishing to protect their national production and limit exposure of their population to alien or irrelevant cultures, mores and values. Previous UNESCO studies have focused on quantifying the flow of TV traffic from north to south and west to east. This study by contrast, shows that earlier fears might well be allayed, at least in Europe and Asia, where such programmes do not actually occupy the premier place one had expected, nor are in fact being watched by viewers as much as was anticipated, and in spite of increased availability.

● *TV Transnationalization: Europe and Asia*, edited by P. Sepstrup and A. Goonasekera, UNESCO 1994, *Reports and Papers on Mass Communication* No. 109, 92 pp., 60 FF.

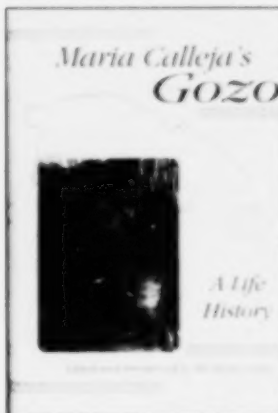
REPRESENTATIVE WORKS**SOUTH AFRICAN SHORT STORIES: From 1945**

to the present. Covering the period of apartheid, from the National Party triumph in the 1940s to Nelson Mandela's release in 1990, this anthology contains 21 of the most compelling South African short stories. With apartheid as dominant theme, they represent a wide range of approaches, from the brutal realism of Can Themba to the lyricism of Bessie Head and Nadine Gordimer. Above all the book testifies to the force of the storyteller's art in the face of tyranny.

● *South African Short Stories: From 1945 to the present*, edited by D. Hirson with M. Trump, UNESCO/Heinemann 1994, 248 pp., 60 FF.

Maria Calleja's GOZO

Legendary home of Calypso, site of a prehistoric civilization, culturally rich and physically beautiful, the Mediterranean island of Gozo, second largest in the Maltese archipelago, has been controlled, and its culture shaped, by the Phoenicians, Romans, Arabs, Normans,



Germans, French, Spaniards, and the Hospitaller Order of St. John of Jerusalem, which held the Maltese islands as a shield protecting Southern Europe from Islam. Maria Calleja, whose life history is inextricably linked with her island, offers a window on the Gozitan world and its now-vanishing mode of life.

● *Maria Calleja's GOZO: A Life History*, edited & introduced by Micheline Galley, Utah State University Press/UNESCO 1994, 245 pp., 170 FF.

YOUNG POETS OF GERMANY

There persists a national unity of literature written in German, despite political boundaries and ideological differences. The 27 poets in this anthology, born between 1952 and 1962, include 18 from the Federal Republic, 7 from the former G.D.R., one each from Switzerland and Austria. Wry, laconic, full of a sense of loss or deprivation, these diverse voices are characterized by a feeling of displacement and dislocation.

● *Young Poets of Germany*, translated by R. Hargreaves, UNESCO/Forest Books 1994, 164 pp., 95 FF.

PERIODICALS

INTERNATIONAL SOCIAL SCIENCE JOURNAL

Population: Issues and Policies. If current trends continue over the next 30 years, the population of our planet will increase by about three thousand million. The future of every society will be affected, and problems of both massive immigration and security will arise. Countries with particularly high rates of population growth - also underdeveloped - will be under greatest stress; those managing to reduce fertility will undergo social changes resulting from changing age structures. In 1974, the ISSJ devoted an issue to population policy, on the occasion of World Population Year and the World Population Conference in Bucharest. This issue returns to the question, again on the global agenda with the World Conference on Population and Development in Cairo last September.

THE UNESCO COURIER

Unsettling Freedom: Nomadism Today. "They live on the outer edge of the economic system, practising a frugal and uncertain way of life. Shy of frontiers controls and supervision, everything about them is a challenge to modern society," editorializes the November *Courier*. Through articles on Moken fishermen off Thailand and Myanmar, the Bedouins, African herdsmen, gypsies, and the Amazonian Maku, "the issue records what nomads tell us, and stimulates reflection about difference, tolerance, about the fears and anxieties that lead people to reject what is at variance with themselves." The magazine also features an interview with South Korean conductor Myung-Whun Chung.

Publications and periodicals are on sale at the UNESCO Bookshop, or by order from UNESCO Publishing, 7 place de Fontenay, 75352 Paris 07 SP, and in Member States through national distributors. Catalogue on request.

LARRY SEAQUIST "A PEACENIK IN UNIFORM"

The belief was that we, the warriors, were in the business of peace. Now we're finding that big armies don't deter the kinds of problems you see in Rwanda, Bosnia or Cambodia, for example. It's time to look ahead."

Larry Seaquist, 56, retired from the United States Navy earlier this year after a career spanning 32 years. Half of this time was spent on the high seas, including a term as Commander of the USS Iowa, and then onshore as head of the Navy Strategic Studies group. Despite his many years in the military, Seaquist never considered himself as a man of war. "I spent 32 years as a professional peacenik in uniform."



(Photo all rights reserved)

He has begun a new career, working on strategies for peace through a private consulting firm he set up in Washington D.C. He is planning a non-governmental organization to be called the Strategy Foundation, and is writing a book, "Waging Peace: Civilization and Security in a Disorderly World". He also participated in

UNESCO's First Consultative Meeting of the Culture of Peace Programme (Sources No. 62), at Headquarters September 27-29.

"The fall of the Berlin Wall turned the foundations of American security strategy upside down. The whole reason for having an American military crumbled. Since then we have been thinking about a new role for it. In the Pentagon it's called 'Operations other than War'. That might sound odd, but why not? Military officers are usually well-educated professionals with valuable experience in strategy development and planning. They have much to contribute."

UNESCO's Culture of Peace Programme, he suggests, could tap military expertise to develop early warning systems that might prevent wars, for example. As a private consultant to defense-related firms, Seaquist has used his experience as a military strategist to develop "peace-gaming" in which "we try to understand how other people think in crisis". He plans to use his non-governmental organization to develop strategies that will help predict the flight of refugees or the proliferation of weaponry.

"The ideal verb in the past was 'to deter', he says. 'We fought if we had to but ideally we wanted to deter war. I think the verb in the future must be 'to shape'. How do we shape the course of events, to the extent that we can, in ways that are more civil and less violent? That's what the culture of peace is all about. It's an active engagement. Not a building of something that deters a bad future."

S. W.

● "Humanity will avoid the danger of destruction only by mobilizing the forces of culture and building up spiritual strength," said **PRESIDENT ALGIRDAS BRAZAUSKAS OF LITHUANIA** on October 20

before UNESCO's Executive Board. "In this respect," he added, "the educational and cultural activities of UNESCO are of paramount significance". The Organization should "support intellectuals in Eastern

CATHERINE DENEUE GOODWILL AMBASSADOR

France's best known actress Catherine Deneuve has been named one of UNESCO's Goodwill Ambassadors, charged with the mission to safeguard the world's film heritage.



(Photo UNESCO/Inez Forbes)

Ms Deneuve received her blue United Nations passport from Director-General Federico Mayor at a ceremony held at UNESCO's Paris headquarters on October 19. "The cinema has greatly enriched my life" Ms Deneuve said, "and I am happy to have the occasion to give something back, to participate in the preservation of film throughout the world."

To mark the occasion, Ms Deneuve and Mr Mayor then cut an enormous chocolate cake. Among guests at the ceremony were Ms Deneuve's mother and her daughter Chiara, along with the French Minister for Culture Jacques Toubon.

The 51-year old star of more than 60 films will preside over the UNESCO/ International Federation of Film Archives Fund (FIAPF). Established in 1938,

FIAPF is a Paris-based non-governmental organization with representation in more than 60 countries. Its mandate is to recover and restore lost or damaged films and to encourage the setting up and

funding of cinematographic archives. Mr Mayor established the UNESCO/FIAPF Fund in November 1993 in response to the pressing need to safeguard the world's collective film heritage. UNESCO endowed it with \$100,000 in May 1994. It is also supported by Member States, the entertainment industry and public and private foundations.

Although films are now considered a major art form, a great number of master works are endangered due to the perishability of original film stock. Three quarters of nitro-celluloid films made between 1895 and 1959 have already been lost, and 60 percent of those made since - on celluloid-acetate - are threatened by the so-called "vinegar syndrome", a degradation phenomenon that bleaches film images.

and Central Europe," he said, suggesting, for instance, that the "integration of our experts in the system of international exchange would allow us to prevent with greater effect the 'brain drain'".

Responding to President Brazauskas, UNESCO Director-General, Federico Mayor, promised to "promote all relevant forms of international cooperation with the countries of Eastern and Central Europe."

THE BOUNTIFUL OCEAN: USED AND ABUSED!

The oceans are a source of life. Yet, contrary to what was long believed, this source is not inexhaustible. Over-fishing, for instance, must stop to enable reproduction of this resource on which nearly 900 million people depend for their food (p. 11). If the open ocean is relatively clean, this is not true for increasingly populated (p. 8), thus increasingly polluted (p. 9) coastal zones. As for the eldorado promised by marine geologists, we must, apparently, wait until land resources are exhausted before more favourable cost-benefit ratios justify deepsea mining (p. 14). Research continues to elucidate the still mysterious links between ocean and climate (p. 10). Finally, the UN Convention on the Law of the Sea is raising high hopes. It declares the oceans outside the 200-mile zone the "common heritage of humanity". We must now learn to use and not abuse the oceans for the good of future generations.

The UN Convention on the Law of the Sea which takes force on November 16, marks an historic date in the relationship between humanity and the oceans, and in the UN's efforts to set up a new world order based on respect for law. The long negotiations leading to this agreement were, from the start, stimulated by the growing importance of resources and sea life to developmental ends and by the need to assure their management and rational conservation.

The UN Conference on the Environment and Development (UNCED) and adoption in 1992 in Rio of Agenda 21, placed ocean management in a larger framework. New principles - as, for example, a more cautious approach to potentially harmful effects on the environment even before scientific confirmation - will now be added to the principles and rules of the Convention on the Law of the Sea.

Recognition by the Rio conference of the role of social partners - the private sector, the scientific community, and society in general - in public administration, opens, moreover, new perspectives for the democratization of decision-making in managing the environment and natural resources.

As a result, we may be at the beginning of a new role for non-governmental organizations, including at the level of the UN system.

A simplistic vision of the oceans, based on the contention that the sea's resources were inexhaustible, led to over-exploitation of living resources and to the degradation

of the quality of the marine environment in numerous coastal regions. The recognition of this crisis (due, in part, to scientific knowledge), has put the concept of a common heritage at the center of debate. The UN Convention on the Law of the Sea applies this idea to ocean depths beyond the limits of national jurisdiction and repeatedly stresses the obligation of states to cooperate on shared resources and such common problems as transnational pollution. The UNCED was also sensitive to the urgent need for international cooperation for the better management of global resources.

OPERATIONAL STAGE

As far back as 1960, the participants in the first International Conference of Oceanography in Copenhagen recognized the need to establish the Intergovernmental Oceanographic Commission (IOC), at the heart of UNESCO, with the goal of facilitating concerted action by Member States in view of the newly-expanded knowledge of oceans and their resources.

This objective was enlarged in 1987, during the revision of the IOC statutes, to include such services as the exchange of data or ocean weather reports, even making them accessible to the general public. This marked the progression of oceanographic studies from an essentially descriptive phase, one that was mainly concerned with description and reconnaissance of the great oceanographic basins, to an operational

stage characterized by a quantitative approach and use of predictive models.

The 2nd International Conference on Oceanography in Lisbon this month, is, in turn, influenced by a new philosophy of globalisation and the need to ensure sustainable development for future generations. The complexity of cooperative networks and the vast scale of research programmes necessitate new institutional approaches. World solidarity depends on national capacities, notably in research and human resources. We must, therefore, institute effective partnerships between nations and the scientific communities, as stressed in Agenda 21.

The new law of the oceans is leading to a revision of management principles and ocean exploration, as well as to changes at institutional level. The announcement by UNESCO's Director-General of his intention to accept the IOC's demand for budgetary, administrative, and functional autonomy is encouraging. This autonomy will enable the IOC to better fulfill its role as competent body in the UN system for the marine sciences, oceanic services, training, education, and mutual assistance. In the final analysis, everything depends on the growing involvement of member states and their commitment to this autonomy.

Mario RUIVO
Chairman of the Steering Committee for the
Lisbon Conference
Gunnar KULLENBERG, Secretary of the IOC

TOO MANY PEOPLE, TOO LITTLE SPACE

Everybody wants to live on the coast, but coastal zones are already under serious pressure.

Fifty percent of the industrialized world lives within one kilometre of a coast. This population will grow at over one percent per year in the coming decades. Normal population growth will account for part of this. The rest will come from migration as people move from the lower to the higher latitudes seeking a better habitat, jobs, medical care, education and recreation.

The movements of people are difficult to manage. Increasing populations mean increased social and economic infrastructure, all of which seriously strain the environmentally fragile and densely populated coastal areas. Strategies to divert migrants to inland areas by developing social amenities, job opportunities, educational and medical facilities that match those in the coastal zone, would seem a reasonable course of action to reduce the problems.

TOURISM'S HIGH PRICE

8 Tourists are another source of population pressure on coastlines. Although tourism - now the world's largest industry - contributes substantially to national economies, and in the case of some island states is virtually the only source of revenue, it commands a very high price.

Resources such as water, energy and the capacity to deal with waste are clearly taxed. The tourists require food from the necessary increased agricultural activities which in turn introduces additional wastes that are often toxic and threaten the marine biosphere. But more than this, the heritage of the natives is challenged. In Barbados, for example, the coastal activities of the past, overseas shipping, fishing, agriculture and small boat construction, have given way to hotel construction and tourist needs. Land prices have skyrocketed, pushing desirable housing sites out of the reach of the locals. Clearly, a serious comparison of the monetary gains of tourism versus the loss of life quality must be placed before the citizens of concerned countries. Their preferences, however, are most difficult to predict.

Swelling populations, temporary or permanent and increasingly affluent, demand a greater variety of products. Many of these arrive on ships that often require larger, deeper harbours. The subsequent dredging inevitably disrupts the

environment, disturbing nursery and breeding grounds of fish and shellfish, to cite just one example. Even greater stress arises from the transport of organisms in the ballast waters and on the sides of ships moving from one port to another. They can alter the make-up of communities of organisms, reduce species diversity and the normal functioning of ecosystems. Life

use of antibiotics to eliminate harmful pathogens, which is causing concern over their potential impact on those organisms not targeted for treatment.

Finally, there is stress on bottom sediments brought about by the accumulation of debris, about 85 percent of which is plastic. Waves and wind wash garbage off the beach, it is transported through the

processes in bays and estuaries and in mariculture pens are perhaps the most threatened. Thus, says ecologist Joel Hedgepeth, the make-up of the natural population of San Francisco Bay has been so altered that the flora and fauna present before the European arrival are impossible to describe. One of the newest residents is the Asian clam, *Potamocorbula amurensis*, that tolerates a wide spectrum of salinities ranging from nearly zero to the level found in seawater, and which poses a potential threat to the basic food chain. It is controlled only by the voracious appetite of another invader, the European green crab, *Carcinus maenas*. Sterilizing ballast waters or their discharge away from the coast would be the most effective way of keeping such intruders out.

Another strain on the coastal zone comes from the growing demand for seafood. This, coupled with declining fishing from the wild, has led to an increase in mariculture which introduces wastes to the waters such as metabolic products of the organisms and the uneaten food. Both can contribute to the growing eutrophication in the coastal zone. Then there is the heavy

atmosphere and discharged with sewage. Many of these materials are virtually indestructible. They provide habitat for opportunistic organisms, interfering with normal community structure. But more seriously they inhibit exchange of gases between the overlying waters and the waters of the sediments, leading to oxygen depletion in the sea-bed and serious interference with the normal activities of organisms. The quantity of plastics ending up in the sea seems to be increasing. Clearly, regulatory actions against the rising use of plastics may be the most reasonable way to counteract this problem.

The world's coastal zones are exits and entries for a mobilized population. Their resources provide a better life for most of their inhabitants. However, the ocean is not a necessary accompaniment to achieve an improved lifestyle. For more effective development of the coastal zone, population management must be given priority treatment.

Edward D. GOLDBERG
Scripps Institution of Oceanography,
La Jolla, California (USA)

THE ULTIMATE GARBAGE DUMP

Like the proverbial ring around the bathtub, dark stains are tarnishing our coasts. Marine biologist Stjepan Keckes discussed the pollution problem with Béatrice Lacoste.

BL: In megacities we have altered the air. We have changed much of the land. What are we doing to the oceans?

SK: The worst pollution occurs within about 200 m of the coasts, and enclosed seas are more threatened.

Accidents at sea such as oil spills, chemical spills or operational discharges from ships are only a small percentage, and affect only limited areas. They are far less serious than slow insidious pollution which people get used to because it is progressive. In warm waters, oil evaporates or degrades and is broken up very quickly by bacteria to harmless substances - carbon dioxide and water. It is worse in the Antarctic, however, where the cold climate slows down bacterial activity and evaporation so the effects of the spill stay for decades on the shores.

In fact, seventy five percent of pollution comes from land based sources, such as sewage, domestic and industrial waste.

Sewage is a two-fold problem: it brings nutrients that feed algae blooms. These in turn deplete the oxygen, which kills the fish. It also contains pathogens. These carriers of disease contained in human waste contaminate sea-food, especially oysters which filter the sea and thus concentrate the pathogens of diseases such as cholera.

Domestic waste contains plastic bottles, bags, containers which degrade very slowly. Trash also includes wood, paper, tin cans etc. You will also have noticed a white froth along the beaches, caused by detergents.

Domestic waste is really a problem. Take relatively small islands such as Trinidad and Tobago. In 1980 they had 250 000 tons of domestic waste - by the year 2000 they will have double that - 500 000 tons. Where will it all go?

Last but not least, industrial waste is important because it carries some very toxic substances such as heavy metals. In Japan, Minamata is a notorious example. The population was poisoned by eating mussels and fish which had high mercury levels.

BL: Fallout from air pollution is very widely spread. What are the sources and impacts?

SK: Indeed, 33 percent of pollution comes through the atmosphere into the ocean. Car exhausts account for 98 percent of the lead that goes through the atmosphere into the sea. Ninety percent of DDT, PCBs, HCS and 50 percent of nutrients such as nitrogen and phosphorous, come through the atmosphere. And of course we must remember that this air-borne pollution travels so that, while it is true that the Mediterranean and other enclosed seas are more vulnerable, even remote places are affected. For instance traces of DDT have been found in the Antarctic.

BL: Algae blooms in Scandinavian countries became known as the "marine Chernobyl" in 1988. In 1989 the northern Adriatic was affected and later Japan. Could such problems spread worldwide?

SK: Algae blooms spread everywhere - and always have. We know that they are linked to nutrients, but we don't understand the process. They are a coastal phenomena, and seem to appear literally "out of the blue". Today we have more and more occurrences.

Obviously we are disturbing the balance of the eco-system. What we know is that we must limit the discharge of nutrients into the sea.

BL: Raw sewage discharged on beaches in Europe and North America is creating serious health hazards. Toxic chemicals such as DDT and PCBs are increasingly found in the Third World. With the increase of tourism the effects could be devastating and unforeseen. How threatened are we?

SK: I come from a small Croatian fishing village called Rovinj, on the Adriatic. The population of 12 000 is multiplied by five during summer when tourists rush to the beaches. Clearly we must keep the sea clean for all these tourists, but how can Rovinj afford a big sewage treatment plant?

The growth of population and tourism means solutions will have to be found - but that means spending money and it would cost between \$25 billion and \$100 billion to clean up the Mediterranean alone.

BL: Industries and radioactive wastes, toxic chemicals and sewage sludge, together with the incineration of toxic waste at sea are being phased out. Are you optimistic?

SK: Regional and global cooperation is crucial. If just one partner cheats he will not just dirty his backyard but the whole sea. Worse than that: all the oceans communicate - so eventually all will be affected. Nuclear waste is unavoidable if we have nuclear industry, and nuclear material takes tens of thousands of years to decay. The bottom of the sea is still the best option for disposal of such waste. For instance the Mariana Trench in the Pacific is 10,000 meters deep. There is no chance that the nuclear waste could come up. Any huge tectonic movement that took place would create such a tidal wave that people would not survive anyway.

The solution is simple: there must be political will supported by adequate financial resources. So long as both remain in short supply we will go on using the oceans as a convenient garbage dump. ■

THE "MISSING SINK" AND OTHER MYSTERIES

The role of the ocean within the complex dynamic, thermal and chemical processes which determine global climate still holds many secrets. Chinese oceanographer Su Jilan explains.

Analyses of polar ice cores show that, over the past 160,000 years, there has been a very close correlation between the fluctuations of air temperature and the level of carbon dioxide (CO_2) in the air. If one goes up, the other tends to follow, and vice versa. Hence, the steady post-industrial rise of CO_2 and other greenhouse gases in the atmosphere is causing concern about global warming and its consequences.

main control of atmospheric CO_2 . Because of its complex carbonate chemistry, however, it is not a particularly efficient sink. Of emissions from fossil fuel combustion and deforestation from 1980 to 1989, only about 30 percent was absorbed by the ocean, with 45 percent left in the atmosphere. What happens to the other 25 percent, the so-called "missing sink" is a subject of intense debate and research.

depth, water in the Antarctic Seas which sinks to the ocean floor will take over 1000 years to resurface, whereas for that in the subpolar seas, which sinks only to about 1500 m, it takes "mere" decades.

Between these two masses is the "conveyor belt", driven primarily by sinking of waters in the Norwegian Sea. It "overturns" in hundreds of years. Global thermohaline circulation also transports CO_2 and heat from the atmosphere to deeper parts of the ocean, thus serving as a buffer against global warming. However, since this convection will also return the deep ocean water to the surface layer, the effects of warming will remain for very many years even if the CO_2 produced by human activity is drastically reduced.

POLEWARD FLOW

Thermohaline circulation may be sensitive to climate change. One example is the "conveyor-belt" controlled by two counter-acting "forcings" in the North Atlantic. The thermal forcing (high latitude cooling and low-latitude heating) drives a poleward surface warm flow and the haline forcing (high-latitude freshwater gain and low-latitude evaporation) drives an equatorward deep cold flow.

In today's North Atlantic, the strong poleward surface warm flow supports a mild climate over Europe. However, paleo records indicate that the "conveyor-belt" may have been switched off many times in the past, resulting in colder surface water and harsh climate over Europe. The shifts were abrupt, as short as a few decades.

To predict this sort of event, tens of thousands of marine scientists and other specialists are working together to unravel the mysteries of ocean-climate links. Their forecasts of hurricanes, floods and tsunamis are already saving countless lives, rendering travel and transport more reliable and safer. Because of a better understanding of phenomena like El Niño, they are helping farmers plan their crops, and hopefully one day will be able to advise the rest of us on weather to invest in an air conditioner or a warm winter coat.

SU JILAN

Second Institute of Oceanography
Hangzhou, Zhejiang (China)

Global climate is the result of complex dynamic, thermal and chemical interactions between the atmosphere, ocean, land surface, cryosphere - ice covered areas - and biosphere, driven primarily by the sun's energy. The El Niño phenomenon is a dramatic example of ocean-atmosphere interaction in the Tropical Pacific.

Of the five components in the climate system, the ocean plays an essential role because of its great capacity to store heat, and to absorb CO_2 , and because of a slow convection process - thermohaline circulations - where cold, dense water formed in the polar regions sinks and flows slowly towards the equator.

A mere 2.5-metre deep layer of water has the same heat capacity per unit area as the whole depth of the atmosphere, and the fact that the ocean occupies 71 percent of earth's surface further intensifies its capacity to store heat, which is also mixed and redistributed by winds.

The ocean is also the largest reservoir of the two most important greenhouse gases: water vapour and CO_2 , providing the

The sediments of coastal plains and seas which account for about 25 percent of marine vegetation on only 8 percent of earth's surface, are good carbon sinks. But since coastal waters are also a source of CO_2 due to oxidation of organic matter, many uncertainties surround the sink/source question in these zones.

The ocean carbon cycle is strongly influenced by biological processes. CO_2 is withdrawn from surface waters by photosynthesis and returned through respiration and decomposition. Carbon also moves from surface waters to deeper layers as a rain of detritus. This "biological pump" reduces the pressure of CO_2 at the surface.

Although biological productivity depends mainly on nutrients, climate change can affect the "biological pump" in other ways, as through extinction of certain marine species or through alteration of nutrient supplies due to ocean circulation.

Ocean water sinks when its density increases through heat loss and higher salinity, the basic mechanisms for thermohaline circulation. Since the process depends on

"POOR MAN'S PROTEIN" IN PERIL

To deal with over-exploitation and drastically diminishing stocks, we must get to the heart of the problem: the absence of fishing rights.

The sea's not what it used to be - a vast expanse with inexhaustible resources. The "golden age" is gone. For the first time, catches of the world's fisheries are on the decline after a peak of 86.5 million tons in 1989. Specialists reckon the turning point was reached several decades ago. Almost everywhere, the resource has attained or exceeded its limits.

About 70 percent of stocks for which estimates exist, are over-exploited. Paradoxically, production is significantly lower than what it would be if these stocks were fished less, thus were able to reproduce more. Global demand, however, continues to rise. Population growth will, if consumption remains at present levels, put the shortfall up to 20 or 30 million tons by the year 2000.

Even considering the present fall in prices, fish has become an expensive item for the rich, and a scarcity for the poor. It is no longer "the poor man's protein".

Thwarted by a limited resource, deep-sea and off-shore vessels are all in the same boat.

In spite of ever more sophisticated equipment and long working hours, catches have levelled off and are deteriorating in

quality (fewer high-grade species and smaller sizes).

Consequently, the classic remedies for bolstering jobs and income, like technological innovations, can only be palliatives. Almost everywhere, the industry is over-equipped, gross over-fishing is typical, clashes between fishermen are frequent and

violent, regulations are rarely applied, and professionals are worried.

Yet fishing is still the livelihood of 200 million people.

On a world scale, the challenges are clear: to preserve part of the natural heritage of humanity, protect fishing communities and guarantee them a decent income, and guarantee this food source for people whose diet is traditionally based on products of the sea.

So far, however, few countries have found suitable solutions to the problem. Instead of tackling the root causes of overfishing, most authorities continue to act on its consequences.

But regulatory mechanisms currently in place cannot reverse the economic reality of the situation.

To hold the fishermen responsible, as some ecological movements have done, is not sufficient. In view of their working conditions, their behaviour is perfectly rational.

As long as access to scarce resources remains largely unrestricted, fishermen have no alternative but to go on investing, maximizing their equipment or sidestepping the rules in order to catch undersized

fish before they are decimated by their colleagues.

Neither are the authorities able to do their job. European fishing policy is a clear illustration of how applying standard remedies to a new situation leads up a blind alley. "So long as the legal status of the resource has not been adjusted to its new

status as a rarity, all attempts at regulation will be ineffective," explains Jean-Paul Troadec of the French Scientific Research Institute for Development Cooperation (ORSTOM).

This is not the first time that human societies have faced such a predicament. In agriculture they overcame geographical expansion by dividing up the land and domesticating wild species. At sea, the fluidity of the environment and the mobility of stocks complicate the task but do not fundamentally change the basic elements.

LEGAL ASPECTS

"On these issues, technical aspects such as the choice of the practical supports (quotas or licences) often get more attention than political and legal aspects, such as the system of ownership and mechanisms for allocating fishing rights, even though," said Troadec, "these latter issues are the most important."

"Whatever the allocation mechanism (administrative rationing, competitive bidding or taxes)," he said, "it will only work if the system of ownership has first been clarified and ownership assigned at the correct level."

The long and complicated process of institutional readjustment on which a profitable, sustainable and responsible fishing industry depends, seems unavoidable. Indeed, the survival of our societies is also at stake.

Let us hope that preservation of the environment, essential to our future, will in the end prevail.

Governments bear a direct responsibility in this matter, and since there are so many different types of fishing, there can be no standard solutions. Each fishery must have its own system, which must be able to evolve gradually.

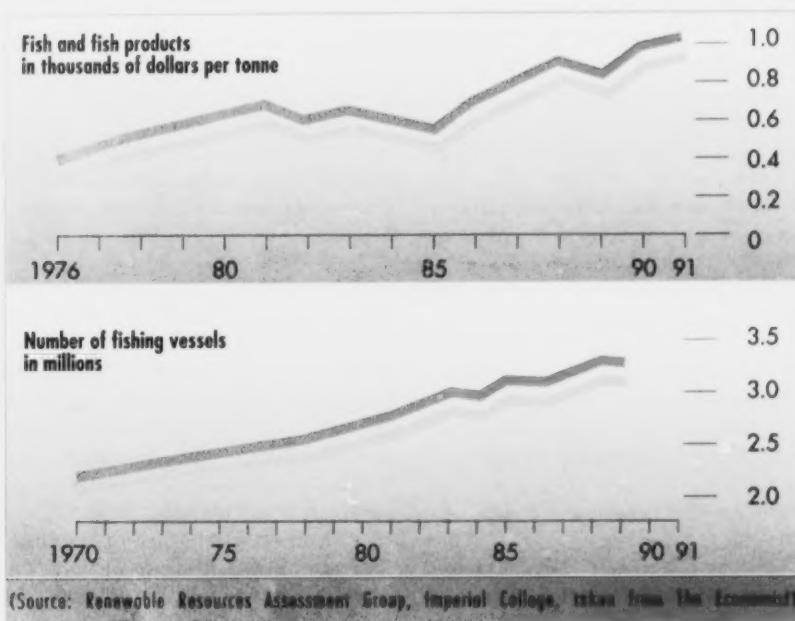
This is possible if we start by the clarification and sharing of ownership. In the absence of a supranational authority, the situation is more complicated regarding deep-sea stocks, but it could rapidly evolve in the economic exclusion zones, which account for 90 percent of global fishing reserves.

Philippe URVOIS

THE FISHING CRISIS

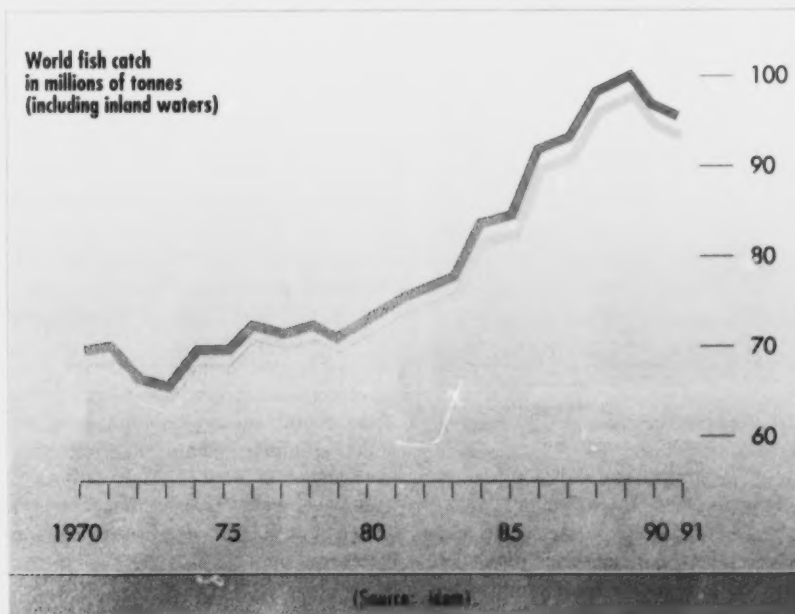
The next century will be faced with the challenge of developing sustainable fishing which is not only ecologically sound but capable of feeding a growing population.

THE SIMULTANEOUS RISE IN PRICE AND NUMBER OF VESSELS



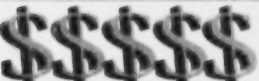
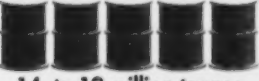
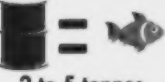
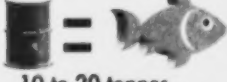
According to the FAO, in 1991 international trade in fish products grew more in terms of value than volume primarily because of a drop in prices for certain products such as shrimp and salmon. The United States is still the largest fish exporter. In 1991, its exports increased by 8% amounting to 3,300 million dollars. Denmark and Norway are also important exporters. Among developing countries, Thailand remains the principal exporter of fish products. Japan continues to be the largest importer with 28% of total global imports. Thirteen species of commercially valuable species (the two major species being tuna and shrimp) alone account for 86% of the total value of marine production, estimated in 1989 to be about 70 billion dollars.

THE DROP IN THE WORLD CATCH



In industrialized countries, fish catches have steadily dropped since reaching a peak in 1989 with 100 million tonnes. The catch recorded in 1991 was the lowest since 1987. There are several reasons for this decline: the economic crisis of the former USSR; the dramatic drop of 100 million tonnes in world catches by the Republics and by Japan. North American countries have also recorded this phenomena as the Atlantic cod fishery has been practically closed. According to the FAO, the growth of total catches recorded in the 80s was largely due to increasing catches of relatively few species. Only eight species accounted for nearly 50% of the total value of the catch which essentially consisted of tuna, salmon, Alaskan pollack and Atlantic cod.

SEA FISHING: INDUSTRIAL VS ARTISANAL

	Large scale 	Small scale 
Number of fishermen employed	 About 500 000	 About 12 000 000
Annual catch for human consumption	 About 29 million tonnes	 About 24 million tonnes
Initial investment for each job aboard fishing vessels	 \$ 30,000 - \$ 300,000	 \$ 250 - \$ 2500
Annual catch for industrial transformation (powder, oil...)	 About 22 million tonnes	 Virtually nil
Annual fuel consumption	 14 to 19 million tonnes	 1.4 to 1.9 million tonnes
Volume of yield per tonne of fuel	 2 to 5 tonnes	 10 to 20 tonnes
Number of fishermen employed per one million dollars invested	 5 - 30	 500 - 4000
Annual fish loss incidental to shrimp fishing	 6 to 16 million tonnes	

(Source: FAO, bulletin of the "International Centre for Living Aquatic Resource Management").

Small artisanal fisheries provide for nearly half of the world's fish production. They employ more than 95 percent of the sector's manpower and consume ten times less than the amount of energy used by industrial fisheries.

Moreover, artisanal fishing better targets the catch and wastes less fish.

According to the FAO's statistics, during the period between 1970 and 1989, the size of global fishing fleets doubled in relation to the growth rate of the world catch.

If some fisheries are still relatively profitable, it is now obvious that globally the financial gains from world catches are not sufficient to cover investment costs.

These important losses are compensated for by government subsidies (the former USSR, European Union, Japan and Norway for example).

Infography: A. Darmon

DIGGING DEEP

The mineral wealth of the ocean is a bright lure for the mining industry, but its exploitation remains limited ... for the moment.

The sea keeps its treasures well hidden but increasingly people are exploiting the minerals that are on the ocean floor. This exploitation is taking place primarily in the shallower coastal and shelf seas.

Excluding gas and oil, bulk sand and gravel for the aggregate industry has been the most successfully and widely exploited offshore mineral. Half of the value of all non-fuel exploitation is accounted for by aggregates extraction which is worth about \$140 million every year. Ten years ago the United Kingdom, for example, extracted 15 million tonnes every year; now it extracts 23 million tonnes. "This growth is mirrored elsewhere in the world," says Peter Cook, Director of the British Geological Survey, "and the trend is likely to continue."

More activity is also likely in the search for gold and diamonds. These are presently being worked near the shore off the western coast of southern Africa and exploration is moving progressively further offshore. Exploration for diamonds is now

become exploited in the next century, particularly where they are found adjacent to countries that have no onshore phosphate resources for fertiliser manufacture.

Such deposits could be attractive because they are easily reached and require no new mining or technology. There are increasing environmental concerns regarding the impact of exploitation of onshore phosphate deposits. "Also, some countries are concerned about the composition of some of the traditional onshore sources of phosphate because of their high cadmium levels, and may be interested in looking at alternative sources," Cook says. "However, even with all these factors in favour of exploitation, it is unlikely that there will be commercial exploitation of offshore phosphate until well into the twenty first century."

As far as deep oceans are concerned, "for the past 30 years or more there has been a great deal of speculation regarding deep sea mineral resources and their potential. The optimism of the early years has not been realised. Deep sea mineral

resources have not been recovered on a commercial basis," Cook says. Indeed, five international consortia invested more than \$650 million on systems for raising the nodules. The systems were tested successfully but have not been put to work commercially. "Metal prices in recent years have not made it viable and there have also been discoveries of large onland deposits of copper, nickel and cobalt in the meantime. This means that the ocean deposits continue to be uncompetitive and the prospects for their exploitation are probably no closer today than they were 30 years ago," Cook explains.

"BLACK SMOKERS"

More recently, strange, mineral-rich "black smokers" have been discovered. These are chimneys found along the deep ocean ridges, where new ocean crust is created. From these chimneys emerge springs of hot water at temperatures of up to 400 degrees centigrade. Sulphides of copper, iron and zinc precipitate from these hot waters when they mix with the cold sea water.

"No factory in the world would be allowed to discharge such a toxic mix," comments Peter Cook. Although the curiosity of geologists and biologists has been stimulated by these strange structures nobody has seriously proposed that they be mined in the foreseeable future. After all, they are so deep that the pressure is equivalent to 200-400 atmospheres, hardly conducive to working conditions.

So although it is unlikely that there will be any major new marine mineral extractive activities in the deep ocean for many years, Peter Cook believes that the time is right to assess these resources and to ascertain the potential effects on the environment and its biota of deep offshore mining. This will probably mean monitoring some of these deep sea environments for extended periods. "The mining business has always been one where it is necessary to take the long-term view," he says, "the commercial exploitation of offshore minerals will similarly require a strategic view, technical innovation and courage."

Max GLASKIN
Nottingham (U. K.)

extending to other parts of the world - off Indonesia and north western Australia, for example.

"Offshore dredging of calcium carbonate, which is used in construction, for example, is being undertaken and it is probable that the level of abstraction will rise," Cook predicts, "but, whilst there are very major marine carbonate resources, many, particularly coral reefs, are environmentally sensitive and unlikely to be worked."

Extensive phosphate deposits occur on the continental shelves in places and may

resources are no longer seen as a bonanza just there for the picking."

Ten years ago the greatest interest in deep-sea mining centred around the recovery of manganese nodules that lie in fields in the major ocean basins. The nodules, each up to 20cm in diameter, contain large amounts of iron and manganese though it is the presence of more valuable metals (copper, nickel and cobalt) that promises economic viability.

"In 1980 there were predictions that, within 10 years, the nodules would be

A HERITAGE FOR THE FUTURE

Our oceans must be managed better. The new Convention on the Law of the Sea is an important step towards this.

The oceans of the world represent vast and vital resources to humanity. How can the world community make sure that the treasures will be justly distributed, and available to future generations?

Throughout history, the oceans have been considered free for anyone to exploit. Their sheer size made their capacity to absorb pollution seem infinite, and their fish stocks appeared to be inexhaustible. Today we know this isn't so. Professor Ulf Lie, former Chairman of the Intergovernmental Oceanographic Commission (IOC) sees a growing awareness of the need to manage and control our use of the oceans. However, he would like to see this process move much faster.

"Today many fish populations are exploited above their maximum sustainable yield, and pollution threatens the health of the oceans. These problems will become more pressing with the increase in the world's population and the migration towards the coasts occurring on all continents."

The United Nations is probably the only existing institution capable of handling these challenges. The problems concerning the oceans don't follow territorial borders. Toxic PCB chemicals have been found in penguins and polar bears, thousands of miles from where they were released into the ecosystem. Different nations exploit the same populations of fish. A possible rise in sea level will affect coastal nations everywhere. There is a great need for international cooperation, in research as well as management."

A CASE FOR COOPERATION

Many areas of ocean research have traditionally been considered of interest only to the developed countries in the North. However, it is these nations alone that possess the necessary resources and technology to perform this research.

"Today, though, we see the necessity of establishing a global ocean observation system, where data are collected from all coastal nations. In the interest of partnership the northern countries should support the development of valid competence in the South, and the research results be made available to every coastal nation." Lie uses

the International Tsunami Warning System as an example to illustrate his point.

"The tsunami is a giant wave triggered off by underwater earthquakes. These waves can travel straight across the Pacific at a very high speed, and hit the shore with devastating effects. Today, tsunamis can be observed from satellites, the approximate time of impact can be calculated, and the countries vulnerable to the wave

United Nations Convention on the Law of the Sea (UNCLOS), which has resulted in a valid international law taking effect in November, as an important step towards proper management of the oceans.

"This convention establishes several important principles. It agrees on giving coastal nations the jurisdiction of ocean areas up to 200 nautical miles from the shore. In a sense, this is the largest transfer

can be warned early enough to take the necessary precautions."

Lie stresses the need for scientifically obtained information as a foundation for international ocean management.

"Many of the problems related to the oceans are of great economic importance to a large number of countries. The fishing industry is one example. The possibility of the rising sea level is another. Before governments decide to spend enormous amounts of money on reinforcing dikes, they want very solid documentation to show that sea level is actually rising."

"We need an equivalent to the World Weather Watch for the oceans. Although processes in the sea are much slower than meteorological changes, we need to gather all available information about the oceans in central databases, and coordinate it to make predictions as accurate as possible. The oceans are a system, and need to be studied as such."

But even with the best possible research, will the world community be able to act upon the findings? Ulf Lie sees the

of resources to the developing countries ever. Not that these areas were the property of the Northern countries earlier, but the North had the technology needed to exploit them whereas the South did not. UNCLOS gives many developing countries the legal control over very valuable ocean areas."

The upwelling areas off the coasts of countries like Peru, Chile, Namibia and Senegal are among the best fishing waters in the world. To underline the value of this: Namibia is, of course, a country very rich in land resources as well, but resources like minerals are not renewable, while fish are. If treated with care, the populations of fish in the sea are long lasting gold mines."

Getting juridical control of sea areas also implies responsibility. Coastal nations are obliged not to exploit the populations of fish beyond their maximal sustainable yield, as well as to perform research as a foundation for proper management. In certain cases this requires the aid of international institutions that can provide the necessary technology and knowledge."

An important new term was coined in UNCLOS. Originally a suggestion by the Maltese diplomat Arvid Pardo, it was decided to classify the resources of the sea bottom areas outside the 200 mile zone a "common heritage of humanity". This is the first time the term has been used in an international law. These vast areas have previously been a kind of no mans land at sea. Calling them our common heritage has consequences for the potential exploitation of the mineral resources on the bottom of the ocean. Although these resources have not been extensively explored, it is undoubtedly an interesting potential resource that has been handed over from random entrepreneurs to humanity as a whole.

"I consider the new law of the sea a revolutionary development in several ways," says Prof. Lie. "It represents a major break with the traditional ideas of the freedom of the sea, as expressed by Grotius in the seventeenth century".

The term "heritage of humanity" has been applied to other areas as well, such as the international climate. It *inter alia* implies the responsibility of all in

managing resources with respect for the rights and needs of future generations.

UNCLOS has been a long time in the making: the UN Conference on the Law of the Sea was the third of its kind. It lasted from 1973 to 1982, when the law was signed by most nations. Only last year was it ratified by 60 nations, the number required to make it a valid international law.

"This law provides us with an important foundation in our efforts for proper management of the oceans," says Lie. "It is an essential tool to the institutions that work in these areas".

PROTECTIVE PLANS

Ocean-related environmental issues are handled by the Nairobi-based UN Environment Programme. UNEP cooperates with national governments to form protection plans for areas threatened by pollution.

Management of living resources like fish comes under the U.N. Food and Agriculture Organization (FAO). In addition, a series of smaller international organs work in specific areas. The scientific part and the development of observation systems as

well as the insurance that the results can be used and shared by all, are the responsibilities of the IOC and UNESCO which also help shape government policies.

"The UNCED conference in Rio has been an important driving force behind our work in these areas," says Prof. Lie. "Chapter 17 in the Rio treaty deals specifically with ocean management and protection, and gives directions for the rights and obligations of coastal nations. Sustainability is a very important term in this work: how can we exploit the riches of the oceans without destroying the resource foundation that belongs to the next generation?"

Although the work in the field of ocean management has intensified, Prof. Lie would like to see more cooperation and co-ordination. "There is a need for a supervising organization to monitor all kinds of ocean issues, under the UN umbrella. The problems related to the oceans may be so important and different from terrestrial problems that this becomes a necessity".

Per Anders TODAL
Bergen (Norway)

TO FIND OUT MORE ...

COASTAL ZONE SPACE: Prelude to conflict? Addresses one of the "critical uncertainties" concerning the environment and sustainable development of our planet's resources, the capacity of coastal areas. By Edward D. Goldberg, 138 pp., 1994. On sale from UNESCO Publishing.

FISHES OF THE NORTH-EASTERN ATLANTIC AND MEDITERRANEAN: complete guide to European and Mediterranean sea fishes, in three volumes gives main features of all known species with over 2,000 illustrations and 1,200 distribution maps. Introductory pages in English and French, main text in English. On sale from UNESCO Publishing.

CHARTS: co-published with the Geological Map of the World, individual sheets or complete sets available for the Geological World Atlas (Antarctic, Arctic, Pacific, Indian and Atlantic Oceans) and the International Geological Map of Africa (sheets 1-6 covering marine areas). On sale from UNESCO Publishing.

Publications, catalogue, a General IOC Brochure, and other information materials available free from the Intergovernmental Oceanographic Commission (IOC).

IOC Technical Series. Recent titles: **Tsunami Glossary of Terms and Acronyms** (No. 37/1991); **The Oceans and Climate: A Guide to Present Needs** (No. 38/1991); **Oceanic Interdecadal Climate Variability** (No. 40/1992).

IOC Guides and Manuals. Recent titles: **Marine Environmental Data Information Referral catalogue**, (3rd Ed., No. 17/1993); **Guide to Satellite Remote Sensing of the Marine Environment** (No. 24/1992); **Standard and Reference Materials for Marine Science** (No. 25/1993); **Nutrient Analysis in Tropical Marine Waters** (No. 28/1993).

IOC OCEAN MAPPING PRODUCTS: for sheets in different scales and, in many cases, data sets on magnetic tape for the General Bathymetric Chart of the Oceans (GEBCO)

and the International Bathymetric Chart of the Mediterranean (IBCM); the Geological/Geophysical Atlas of the Indian Ocean and other products now available or in preparation, contact Desmond P. D. Scott, agent for IOC Mapping Products, Cumbers, Mill Lane, Sidesham, Chichester, West Sussex PO20 7LX, U.K.

The Marine Information Centre, UNESCO will provide its complete catalogue to free publications in several series, including:

INTERNATIONAL MARINE SCIENCE (IMS) NEWSLETTER: published quarterly by UNESCO in collaboration with other UN agencies, provides information on international activities and publications, including a calendar of coming events.

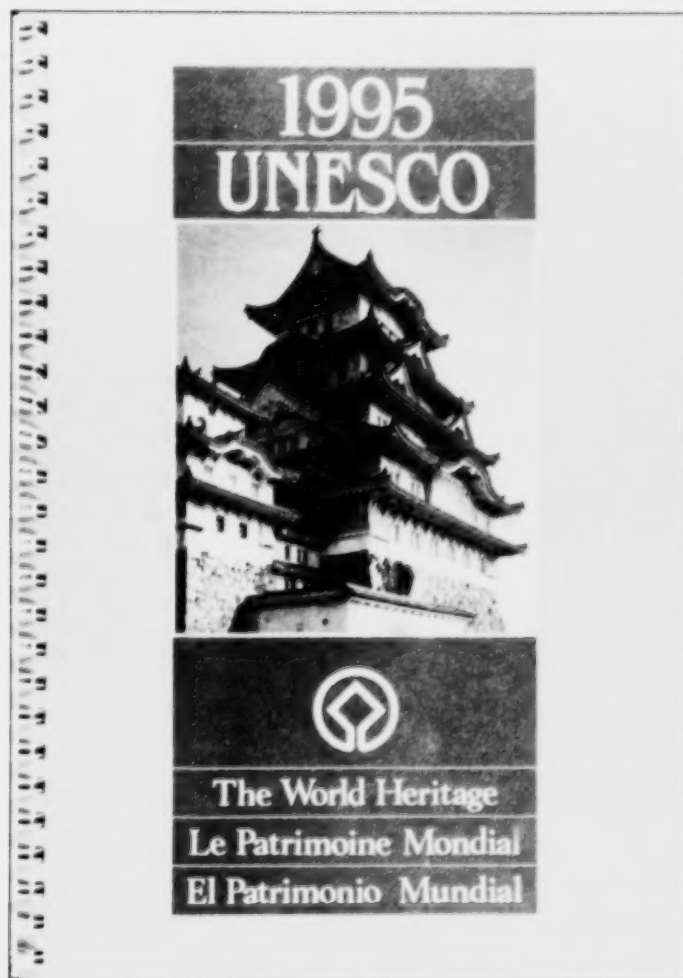
UNESCO Technical Papers in Marine Sciences. Recent titles include: **Coastal Systems Studies and Sustainable Development** (No. 63/1991); **Methodology for Oceanic CO₂ Measurements** (No. 65/1992).

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UNESCO SOURCES

dates they would usually start school after the summer break despite the lack of materials and means. His key support has been the Teachers Emergency Package (TEP), a sort of "classroom in a box" developed by UNESCO's Programme for Education for Emergency and Reconstruction (PEER).

In a large wooden box, the TEP contains all the necessary items to run a class: blackboard paint which can be applied to any flat surface, alphabet and multiplication tables on cloth sheets, slates, pencils

Conceived for children between five and 14 years old, the teaching programmes concentrate on the essentials: reading, writing and arithmetic. Basic safety instructions such as how to recognize anti-personnel mines are also included. There are about 40,000 mines scattered in Rwanda.

It should also be remembered that these children are haunted by the violence they have witnessed and in no state to assimilate new knowledge at a normal pace. The training programmes thus emphasize the teachers' psychological role in helping the



THE TEACHER'S
EMERGENCY
PACKAGE
(Photo
UNESCO).

and exercise books for 40 pupils. The materials are in Kinyarwanda, the national language. All that remains to be found is a place - a building, or even the shade of a tree - where the children can gather. The cost works out at about 10 French francs (a bit less than \$2) per pupil.

PEER, with UNICEF's full support, has so far distributed 600 TEPs in Rwanda. The goal is to get 9,000 out by the end of the year, thus reaching 700,000 children. To ensure that there are enough teachers, experts from international organizations are providing intensive courses to trainers who in turn teach the teachers - many of whom are simply volunteers with little or no experience. In Rwanda itself, there are plans to train 6,000 people in the coming months. As a further support, each TEP also comes with a manual to guide teachers through their lessons.

"The TEP was never conceived to provide a classical education", stresses Pamela Baxter who is in charge of PEER operations in Rwanda. "It's simply a rapid response to an emergency situation, a bridge between the void that was created by the war and a return to normal."

children overcome their traumatic memories by urging them to express themselves through speaking, drawing, singing and other activities.

Long-term work is also underway to reconstruct the entire education system - from rebuilding and repairing schools to upgrading teacher quality and re-designing the curriculum. Basic subjects such as math should not pose major problems. However history, for example, must be completely reworked as the approach taken in the past depended on the relationship between the Hutus and the Tutsis. UNESCO has set up a team of Rwandan teachers to prepare a new series of text books.

Basically, the system - from its aims to its selection criteria which were previously linked to ethnic and regional "quotas" - is being completely overhauled.

As surviving teachers point out, the politicians may be overwhelmingly responsible for the war in Rwanda, but education - through its organization and the treatment of subjects taught - also had its part to play.

René LEFORT
Kigali

• **"WOMEN AND WORK"** was the theme of the "University for Women of the Black Sea Region" held in Bucharest (Romania) from October 3 to 8. The approximately 30 participants pointed to discrepancies between the legal status of women and the actual situation, *de jure* equality not necessarily guaranteeing *de facto* equality. Most agreed that *"the solution to the multiple problems encountered by women in transitional societies could only be solved when the economies of these countries become healthier."*

▼ The first **FESTIVAL OF ISLAMIC ARTS** was held in Islamabad (Pakistan) from October 7 to 15. With UNESCO's assistance, it gathered about 2,000 artisans and other craft specialists from five continents. Participants of an International Symposium simultaneously organized by UNESCO reviewed progress in implementing the 10-year Action Plan for Crafts Development in the World. They recommended launching projects to link crafts with major development sectors (environment, education and tourism), train young men and women and promote crafts both at national and international levels.

• **"THE DUTY OF THE RESEARCH SCIENTIST IS TO DREAM AND TO INFORM,"** said French geneticist Daniel Cohen as UNESCO Director-General. Federico Mayor, presented him with the 1994 Literacy Prize for Human Rights for his book *"Les Gènes de l'Espoir"*. The award was created in 1984 by the NGO Les Nouveaux Droits de l'Homme (New Human Rights). Dr Cohen's book, devoted to his research on the human genome, highlights the relation between science, medicine, genetics, ethics and human rights. For Dr Cohen, it is up to society to *"control the applications of research and assure that the benefits of science are shared by all humanity"*.

ENDANGERED SPECIES?

"THE MEDITERRANEAN, SINGULAR AND PLURAL"

was the theme of symposium in Casablanca (Morocco), October 1-3. Organized under UNESCO's new "Shore-to-Shore" Network (R.E.U.N.I.R from its French acronym), it was attended by about 50 parliamentarians, academics, sociologists, representatives of cultural organizations from Mediterranean countries. At the centre of debates were: peace and tolerance, immigration the cultural challenges of development, and the participation of women. An Action Plan was adopted to intensify and reinforce dialogue in the region.

On October 9, the Director-General of UNESCO, Federico Mayor, and the President of the Italian National Research Centre, Enrico Garaci, signed an agreement to develop an **INTERNATIONAL AIDS RESEARCH NETWORK** "to establish new links among AIDS researchers and scientists of other disciplines". It will be financed by the Italian Centre from a 300,000,000 lira (about \$200,000) contribution to UNESCO's AIDS Prevention programme for 1995-96. The agreement was signed at the first Interdisciplinary AIDS Meeting organized by the Foundation for AIDS Research and Prevention, in Venice on October 8 and 9.

Named Pavel, Tatiana or Dimitri, aged between 12 and 25 years, they played Mozart, Debussy or Rachmaninov. Tomorrow they will be world famous: the Russian winners of the great international music competitions performed at UNESCO Headquarters on October 5. The concert was organized by the charitable organization **NEW NAMES** whose purpose is to promote young talent outside of national frontiers.



For the first time, managers of Biosphere Reserves meet to discuss their problems and their achievements.

Biosphere reserves were created to protect some of the most beautiful sites - and species - in the world. Yet now, more than orchids and giant otters are under threat. Reserve administrators have themselves become endangered: one received six bullets in his abdomen and twice saw his office set on fire; another was burned in effigy; yet another barely escaped a blow that could have disfigured him. These and other eyewitness stories were told in the course of "Man and Protected Areas" a seminar in Florac (France) from October 3 to 8, 1994.

Organized by the French MAB Committee, UNESCO's Division of Ecological Sciences and the Cévennes Biosphere Reserve, the seminar was attended by 91 participants from 18 countries, members of EUROMAB, a network which groups Europe, Russia, the U.S. and Canada. While

be: representative of an ecosystem; preserving biodiversity; and sufficiently large, ideally possessing one or several central areas, including buffer and transition zones.

The role of the biosphere administrator can vary widely, depending on a reserve's geographic situation, climate, and the needs and economic interests of its population. Take Marvin Jansen, who administers the Biosphere Reserve in Glacier Bay, Alaska (U.S.). Tall and athletic, Jansen turned up for the seminar in a short-sleeved shirt - for him, the 8°C weather in the Cévennes was virtually a heat wave. To call his reserve remote would be an understatement: most of its sparse population cannot be reached by road and a supply ship comes only three times a winter. To survive, he says, you must learn to do everything yourself - including repairing cars.

Like most biosphere regions, Glacier Bay has its own unique beauty - as well as a distinct set of problems. "On the coast of Alaska, we have a very diverse lush temperate rain forest with between 60 to 200 inches of rain a year. In the mountainous zones the forest is less dense. Then we have in the taiga, and the tundra on the northern slopes. Wildlife is very abundant."

TOURISM

"The few settlements on the coast are not connected by roads. The main activities are fishing, mining and tourism, far ahead of oil and logging," he said. "Tourism brings 250,000 visitors per year and profits of about one billion dollars for shipping companies. Cruise ships and tour boats endanger humpback whales and orcs. The number of ships, routes and speed are now regulated. Another problem: overfishing. Packing plants are closing. If, in the near future, we need to rule out fishing, it will be dramatic for the population."

Jacques Portecop - an administrator in the Caribbean - on the other hand, reported a different source of strife. Portecop is president of the administrative council of the Guadeloupe National Park, which became a Biosphere Reserve this year. "We haven't had problems with fishermen since we decided to protect the Eastern coastal zone of Basse-Terre, the center of which forms the core of the reserve," Portecop



ALEXANDER KERR (L.) AND COLLEAGUES:
"ADRENALINE ADDICTS"
(Photo France Bequette).

national MAB committees meet regularly - two previous EUROMAB seminars have been held in Strasbourg (France 1991) and in Zakopane (Poland 1993), men and women in the field had never come together. Thus the Florac seminar was a first.

First created in 1971, the now 324 reserves in 82 countries fulfill three functions: conservation, development, and logistical support for training and research. To be granted reserve status, a region must

reported. "We came to an agreement with them to limit fishing there so that the threatened supply could be replenished."

Only one fisherman, of 84 years, still opposes us. Hunters are a different matter. There are few of them, but they overwhelm us with threats relayed through the media. They figure that the French Revolution gave people the right to hunt and that hunting season should open on Bastille Day each year, in the middle of the nesting period! The president of the hunting society himself comes to poach in the reserve. He argues that more and more birds can be found on the island, without acknowledging that it's precisely because of the reserve that they're multiplying. Any dialogue between us has now been virtually cut off."

FISHING AND HUNTING

Fishing and hunting conflicts can be found in almost every EUROMAB reserve. Alexander James Kerr, administrator of the Scottish natural heritage, outlined problems facing his region - and offered some interesting ways of helping sparring parties to reach a constructive solution.

"We have far too many red deer but it is an asset for landowners as the land is valued by the number of male animals. But each male has a herd of females. We must reduce their number. Ecologists tell us: don't kill. We must find tricks, for instance say that deer are starving or talk about the management of mammals, never mentioning the red deer. The best way to end a conflict is to have people meet, stand back and generalize. There is always something to do, role play, for instance. Another means is to involve people personally: 'you love to fish and there is very little fish left. For the sake of your children, would you give up?'"

Zbigniew Krzan has been administrator of the Tatry National Park, in Poland, classed as a Biosphere Reserve two years ago. The initial acceptance of his reserve varied widely, he said. Some local residents welcomed the idea, while others were hostile. "Some types of conflict are difficult to understand. Everyone wants to protect nature. When we became a reserve, we explained to the inhabitants what it meant. They refused being placed in a buffer zone because they wanted to go on cutting trees, but they were quite happy to be in a transition zone."

The fact that some administrators are technically state servants can complicate their roles, adds Krzan, who finds that following the rulebooks too closely often hampers attempts to communicate with his region's inhabitants. For Kerr, this means that "Managers are paid to disregard the rules. Once I sent an official letter to a peasant without explaining it to him first and when I visited him, he wanted to punch me in the face. Peasants are the same all over the world. We must learn how to talk to them. Never come straight to a point. Remember that reserve staff have family ties and it is often difficult for them to enforce regulations. Always foster compromise: several mayors fight over a museum. Why not a mobile display?"

Guillaume Benoit, Director of the Cévennes reserve - the only inhabited French national park - offered some original solutions: "The 1,500 people living in the park are the only ones allowed to hunt. Since we're overrun by wild boar and deer, there's a lot of hunting. We work with the people who host and educate the public. But we have only a consultative role in forest management. Still, we do encourage farming as a good way to preserve biodiversity. The Milan eagle lives on reptiles in open spaces. If we reforest too much, it will go. We have no statutory power, so everything rests on negotiation. Still, we don't know how to control the quasi-industrial theft of our mushrooms by outsiders!"

TROUBLE IN THE EAST

Tourism, a source of revenue, can also be a deadly enemy. In the Tatry, plans are underway for a ski resort with an expected 2.5 million visitors a year. In this and other former Soviet bloc nations, new trouble comes as land is privatized. In some countries, such as Romania, land has been distributed, free, to the people. In others, like the Czech Republic, it has been returned to former owners. The danger lies in what happens to these tracts of land when they fall into unscrupulous hands.

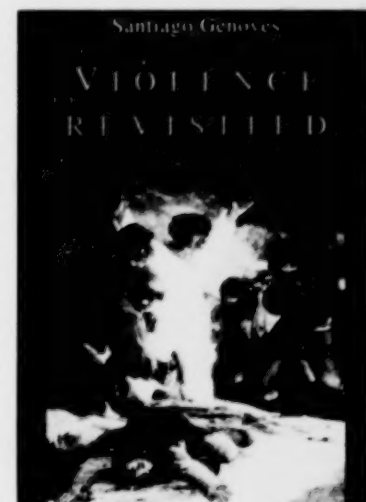
These concerns and others mean that Biosphere Reserve managers are under more pressure than ever. As Alexander Kerr joked: "We have to be adrenaline addicts to do this job".

France BEQUETTE
Florac (France)

Argentine pianist Miguel Angel Estrella, a UNESCO Goodwill Ambassador, gave a concert on October 2 at the Opera of Lyon (France) for the benefit of **UNESCO'S CHERNOBYL PROGRAMME**. Young Ukrainian musicians, 11 and 12 years, joined with him to interpret J.S. Bach's Concerto for four pianos. Proceeds of 250,000 Francs will go to rehabilitation centres set up under the Programme in the Ukraine, Belarus and Russia to offer psychological assistance to victims of the 1986 disaster. On September 28, the auction in Paris of 200 paintings by contemporary Russian and Ukrainian artists will also benefit the Programme.

What is violence? How and when does it flare up? Is it normal among human beings, or the rest of the animal kingdom for that matter? Has it always been the case? Can violence never be avoided? In his book **VIOLENCE REVISITED**, Mexican anthropologist Santiago Genovés, addresses these questions. Drawing on 30 years of research, the author presents an overview of what we know about the aggressive behaviour human beings display in both their inner lives and their relations with nature.

Publications Unit
Sector of Social and Human Sciences



FROM DOGMA TO TOLERANCE

UNESCO-sponsored panel probes the role of religious education.

• "Teachers often think they have lost the respect and consideration that a difficult profession merits," said Federico Mayor, Director-General of UNESCO, inaugurating the first **INTERNATIONAL TEACHERS' DAY** on October 5 in Geneva (Switzerland) during the International Conference on Education. Teachers' organizations in some 100 countries joined to mark the event. In addition to distribution of the 1966 'Recommendation Concerning the Status of Teachers', celebrations were organized in such far-flung places as Senegal, Uganda, India, Ireland and Paraguay to recall "the dominant role" played by some 47 million teachers around the world.

▼ With over 250 companies from 40 countries, about 100,000 spectators, 400 performances in 34 locations, the **WORLD FESTIVAL OF PUPPET THEATRES** marked its 10th anniversary in Charleville-Mezière (France) from September 23 to October 2. Under UNESCO auspices, the world's largest meeting of puppeteers makes possible the meeting of cultures and traditions from five continents under the banner of this art, at the cross-roads of music, theatre and dance.



• What role should religions play in promoting education for tolerance at a time when religious intolerance offers a daily diet of violence, unjust laws, discrimination against women and free thinkers?

• To debate the question, a round table was held last October 4 parallel to the International Conference on Education (on the theme "education for tolerance") organized by UNESCO in Geneva (Switzerland) from October 3 to 8. The panelists included a Buddhist, a Muslim, a Baha'i, a Hindu, a Christian, and a Jew.

• Abdelfattah Amor, UN Special Rapporteur on religious intolerance, recalled that the 1948 Universal Declaration of Human Rights recognized religious freedom, including the right to change one's religion, "yet there seems to be less freedom, not more, as time passes".

APOSTASY A CRIME

• He cited the 1993 Human Rights Conference in Vienna as a step back since it recommended combatting discrimination "in the framework of national laws". What about countries where apostasy is a crime? Since today, religion is so present "he said, "fanaticism threatens the right to peace."

• "Nonetheless," countered Jana Marcus, a specialist in Judaism, "religion can also be a source of unity". "We must accept human beings regardless of their religion or lack of one," insisted the Buddhist representative, A.T. Ariyaratne. Beza Bilgin, professor of Islamic theology in Ankara (Turkey) added, "God punishes non-believers, but lets them live."

• Representing the Baha'i, Trevor Finch, Head of Religious Education at a school in London, suggested the best way to fight fanaticism would be to have a universal programme of religion in each school. "When morality and spirituality are absent, including in the education system, the human spirit is impoverished and humanity enslaved." The Hindu representative, Kezevino Aram, also argued for religious education because "to be receptive to others, we must be sure of our own cultural and religious roots".

• But since "religious instruction is founded on dogma and the conviction that it embodies THE truth," said one participant, "can we teach other religions which

contradict that truth?" A representative of the World Council of Churches agreed that "believers are faced with a veritable revolution: they must seek truth, but never think they actually possess it."

The panelists agreed that religious instruction should take inspiration from institutions that teach tolerance, as for



A KORANIC SCHOOL IN MOROCCO
(Photo UNESCO/Carl).

example, the integrated schools of Lebanon. "During Ramadan, the non-Muslim students get up before sunrise to fix a hearty breakfast for their classmates to help them through their day-long fast," explained an Irish university professor. "Unfortunately," he added "religious leaders are often the worst enemies of this type of school".

Priority, said participants, should be given to training religious educators to be more open to other religions, and manuals, which Mr Amor termed "hymns of intolerance," should be revised to contain "more information about different religions, emphasizing beliefs common to all".

Another speaker expressed the view that non-believers should help devise religious teaching programmes, because "religion is much too important to be left in the hands of believers alone."

Sophie BOUKHARI
Geneva

HOLDING BACK THE DESERT

102 states sign the Convention to combat desertification.

"We now have the machine, but we have to learn how to work with it." Despite two years of difficult negotiations the Swedish president of the committee that drew up the desertification convention, Bo Kjellen, is cautiously optimistic the new agreement will prove effective.

The Convention was signed by 102 States at a ceremony held at UNESCO's Paris Headquarters on October 14-15. It will enter into force 90 days after ratification by the parliaments of 50 countries. Although this can be the longest part of the process (the 30 ratifications required for the biodiversity convention took almost two years), Mr. Kjellen believes the urgency of the situation will push governments to act.

"Desertification is biting very hard" he points out. "Some 900 million people are already being directly affected, with one third of them in Africa - almost half of which is covered by drylands." And the situation is worsening. An estimated 500,000 hectares of irrigated land are desertified each year through salination and water-logging, not to mention over-grazing and tree-felling. The annual loss, in

successful implementation "especially in Africa" said Director-General Federico Mayor at the signing ceremony.

The Organization puts particular emphasis on building up national capacities - training the scientists, establishing research institutions, drawing up effective policy - to deal with the problem in affected countries. The Man And Biosphere Programme is working in the Sahel for example, to reinforce scientific institutions and train researchers who are working in the agricultural, forestry and pastoral domains. Two of the International Hydrological Programme's projects will lead to a better understanding of run-off from waterways and how it can be harnessed and used in west and southern Africa. The education sector has prepared a module on desertification for primary and secondary students that will help them understand the process and look for ways of dealing with it. UNESCO is also involved in the development of an environmental observatory for the Sahara and Sahel regions.

Ultimately though, the convention's success will depend upon its States Parties. The financial support they provide will be

THE ANCIENT CITY OF CHINGUETTI IN MAURITANIA IS SLOWLY BEING ENGULFED BY THE DESERT (Photo UNESCO/R. Louchard).



terms of global income is estimated at about \$42 billion.

The Convention commits governments to protect the fertility of the drylands, and insists on the involvement of local populations in the process. It also encourages the cooperation of NGOs, academic institutions, the scientific community and the UN and its various agencies.

UNESCO, which has been working on desertification for more than 40 years, "will spare no effort" for the Convention's

one of the litmus tests. The United Nations Environment Programme (UNEP) estimates that between \$10 and \$22.4 billion will be needed annually for 20 years. At the moment less than one billion dollars are spent each year, and in the treaty negotiations the donor nations resisted any commitment to increase these resources. As the old saying goes "action speaks louder than words"...

Sue WILLIAMS

"I would like to create a human rights observation centre within UNESCO to develop **PUBLIC AWARENESS OF VIOLENCE, TERRORISM AND HATRED**. Not simply an observatory to establish a list of horrors, it would also provide us with follow-up for studying and helping to prevent the causes of violence and human rights violations." Director-General Federico Mayor, speaking before UNESCO'S Executive Board at the start of its 145th session, added that the observation centre "should serve as an effective arm to fight against silence that conceals violations of rights and freedom."

Two seminars were hosted by Uzbekistan in early October in the framework of UNESCO'S **SILK ROADS: ROADS OF DIALOGUE** project. The first, from October 3 to 6 in Tashkent and Samarkand, laid the foundations for a joint programme of cultural tourism along the Roads of Central Asia. Participants at the second meeting in Samarkand on October 7 and 8, agreed on the establishment of an International Institute for Central Asian Studies (IICAS) concerned notably with archaeology and ethnology, literature, folklore, the environment and the social sciences.

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From December 12 to 16 at Headquarters, a UNESCO/Electricité de France Round Table on **ENERGY AND ENVIRONMENT** in Central and Eastern Europe will bring together some 80 experts as part of a series on "Strategic Issues in the Reform of Energy Systems". A Meeting on Contributions of Various

Partners to the **PROMOTION OF A CULTURE OF PEACE** will be held in Barcelona

from December 12 to 17. A GALA Evening at Headquarters on December 15 will be organized by the

Foundation **PALESTINE FUTURE**, Chaired by Yasser Arafat and Danielle Mitterrand and

under the Presidency of Princess Abir Touman. Proceeds will go towards educational and health needs of

Palestinian children. From December 12 to 16, a sub-regional seminar in Lilongwe (Malawi) will be

devoted to the **ASSOCIATED SCHOOLS PROJECT (ASP)** in Southern Africa. The devel-

opment and extension of ASP will also be the focus of a workshop for field staff from UNESCO's **RE-**

GIONAL OFFICES, in Dakar (Senegal) December 18 to 21. Ceremonies to award the **UNESCO**

PRIZE FOR PEACE EDUCATION 1994 will take place at Headquarters on December 20.

The United Nations General Assembly has designated 1995 as **U.N. YEAR FOR TOLERANCE**.

Marking the first public demonstration in 1895 of the Cinématographe, invented by Louis and Auguste Lumière,

at the Grand Café in Paris, a **CELEBRATION OF THE CENTENARY OF CINEMA**

will be held at Headquarters January 9 to 21. It will include an Exhibition of photos entitled "100 Years of

Cinema, Memory of a New Art" and a Festival of films, including archive and restored films, on the theme of

"Tolerance". **THE ART SALON** and the unique role it plays in democratic societies will be the

theme of a symposium to be attended by representatives of 22 countries at Headquarters on January 18.

OUR NEXT ISSUE will focus on new directions taken by the **INTERNATIONAL PRO-**
GRAMME FOR THE DEVELOPMENT OF COMMUNICATION (IPDC), set up
in 1980 to help strengthen communication capacities of Member States and now supporting their moves to
develop free, independent and pluralistic media. Our dossier will report on a selection of IPDC projects rang-
ing from training in radio, TV and written press, to news agency development and the provision of equipment.